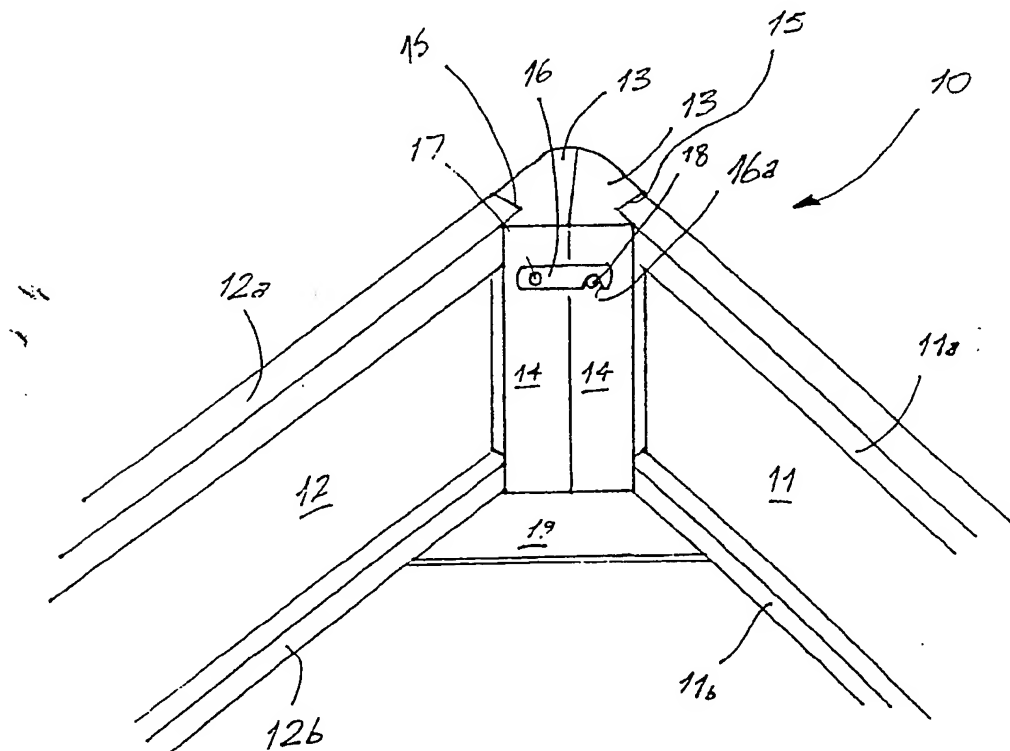


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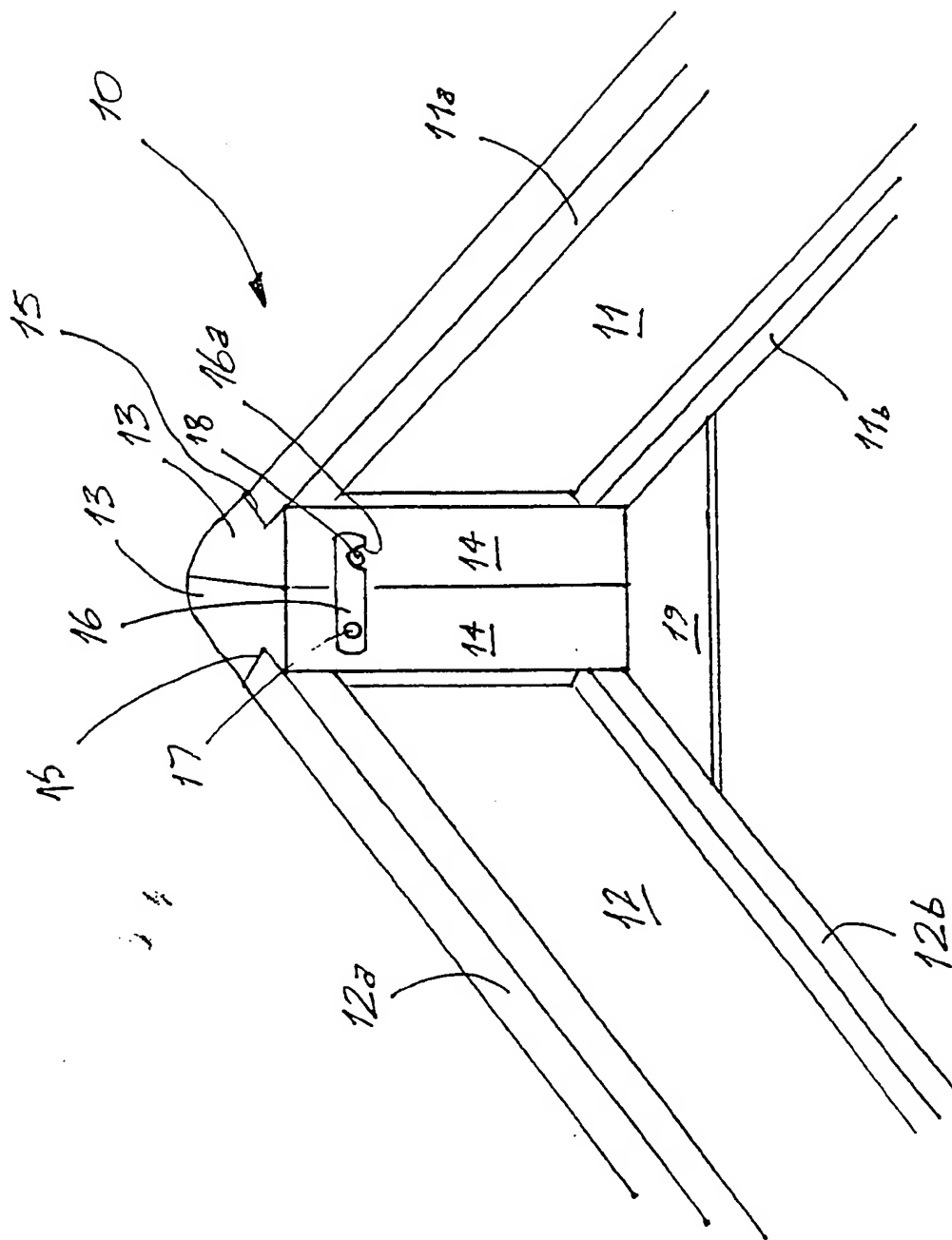
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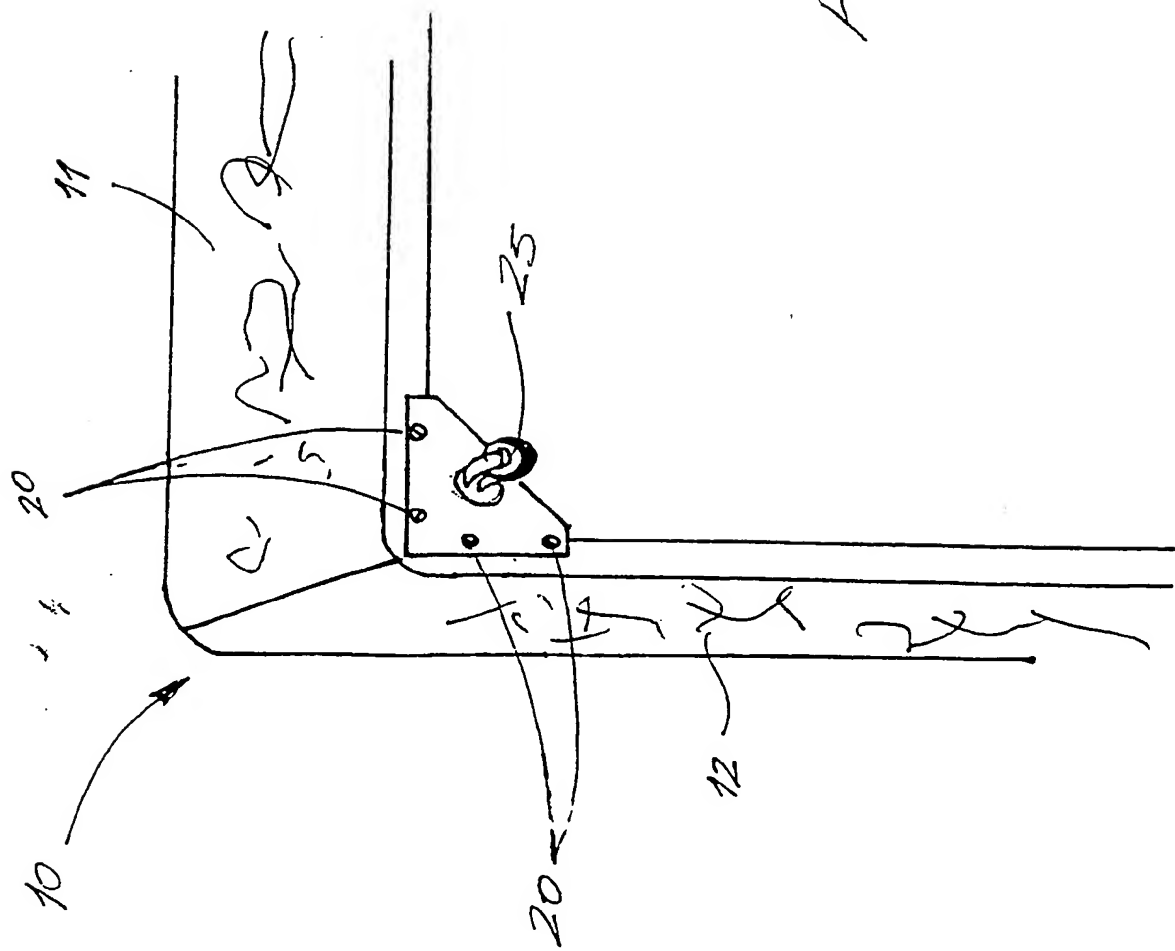
(57) Two panels 11, 12 are joined by corner members 13 rigidly secured to the panels 11, 12 and provided with inclined faces which abut to dictate the angle between the panels 11, 12. Swinging link 16 and lower screw plate 19 hold the joint together. The panels 11, 12 are received in recesses 15 in the corner members 13. The panels 11, 12 are the side and end panel of a divan bed, and the screw plate 19 has a castor on its underside. The side panels include rails for supporting cross-members for the mattress.



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FIGURE 2

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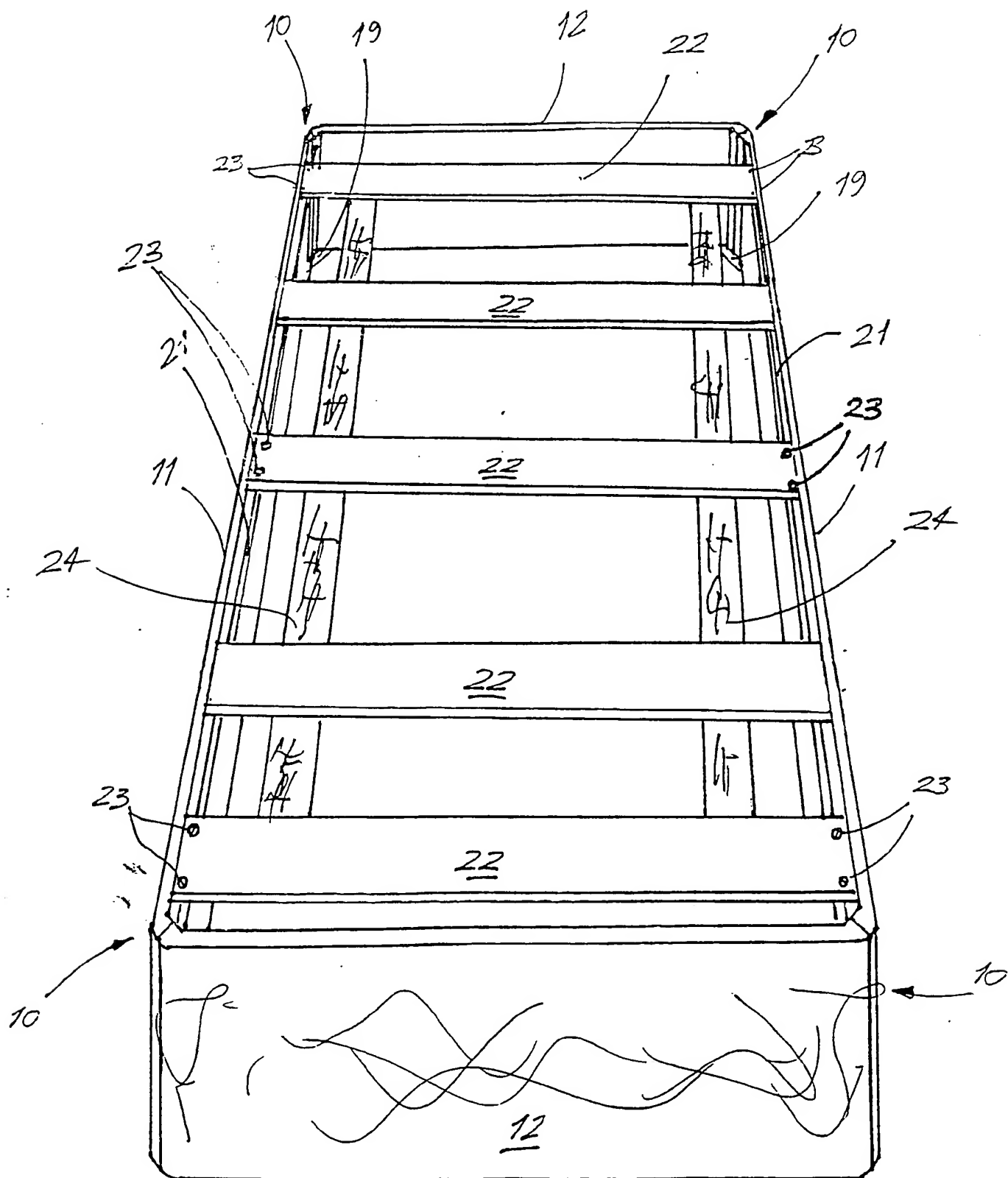


FIGURE 3

A Joint and an Item of Furniture  
Incorporating such a Joint

5 This invention relates to a joint, and to an item of furniture incorporating such a joint. In particular, but not exclusively, the invention also relates to a divan incorporating such a joint.

10 It has long been known to provide items of furniture in kit form, for so-called "self assembly" by purchasers thereof. There are advantages for manufacturers, distributors, retailers and purchasers of such furniture in providing the components of the furniture in flat packs. However, the joints employed in such furniture for assembling flat panels generally require the inclusion of, e.g., bracing components to provide adequate stiffness in the joint. Moreover, the joints commonly used require access to a fastening member from the outside of  
15 the piece of furniture. Therefore, it has not been possible to provide aesthetically attractive, easily manufactured self-assembly furniture such as a divan base having an upholstered exterior finish.

20 According to a first aspect of the invention, there is provided a joint for joining a pair of members, comprising a first protuberance rigidly secured at one end of one such member; a further protuberance rigidly secured at one end of another such member, each protuberance including a forward face angled relative to the respective member to which it is secured; a first link; a second link; and means whereby the links may be secured interconnecting the parts of the joint, the arrangement being such that the forwardly directed faces of the  
25 protuberances are engageable in mutual abutment to interconnect the members in a predetermined orientation, the respective links being securable on such engagement of the forwardly directed faces to prevent separation of the members in at least two mutually orthogonal directions.

30 One advantage of this arrangement is that the protuberances can readily be shaped and sized to provide adequate stiffness of the joint on assembly thereof for use in self assembly furniture, whilst still allowing the furniture to be transported as a flat pack.

In preferred embodiments, the members are generally laminar.

Preferably, each of the protuberances includes a rear face, the first link and the means whereby said link may be secured being arranged such that, on securing thereof, said link interconnects the rear faces.

5 An advantage of this arrangement is that the joint can be assembled without the need for fasteners on the exterior surfaces of the members. Thus, the joint is particularly suitable for joining two laminar members having an upholstered exterior finish.

10 Preferably, the members are received in respective recesses formed in the protuberances. In particularly preferred embodiments, the joint includes a plurality of members secured to each protuberance. When such a construction is adopted, the members can be covered to give the appearance of discrete, generally laminar members.

15 Conveniently the means whereby the first link may be secured includes a first member projecting from one of the rear faces and a further member projecting from the other of the rear faces, said link being adapted to be pivotably captive on the first member and selectively engageable with the further member on engagement of the forward faces.

This feature allows the joint to be readily and cheaply manufactured.

20 In a preferred embodiment, the forward faces are angled relative to the respective members such that said members are joined at right angles one to another on engagement of the forward faces.

Thus, the joint is particularly suitable for use in the assembly of furniture.

25 Conveniently, the second link comprises a plate adapted to interconnect respective edges of the members. This allows for bracing of the joint in a different direction from that provided by the first link.

30 In particularly preferred embodiments, the plate includes a lower surface and a castor secured to said lower surface. Thus, the plate may be advantageously used to support a castor itself used for supporting e.g. an item of furniture in which the joint is incorporated.

The invention also relates to an item of furniture including a joint as specified hereinabove.

Additionally, the invention relates to a divan comprising two end panels and two side panels defining four corners, each of said corners including a joint as defined herein above.

5 Preferably, each of the side panels includes an elongate support rail, and the divan includes at least one mattress support member extending transversely of the divan and supported on the or a plurality of said support members.

Thus, the divan may be provided for sale in kit form in a flat pack, and may readily be assembled by a purchaser thereof.

10 Preferably, the or a mattress support member is securable in position on at least one of the mattress support rails, thereby advantageously improving the rigidity of the divan on assembly thereof.

Preferably, the divan includes at least one upholstered panel.

15 By "divan" as used herein is meant either an entire divan including a mattress, or a divan base to which a mattress may subsequently be added.

There now follows a description of a preferred embodiment of the invention, by way of example, with reference being made to the accompanying drawings in which:-

20 Figure 1 is a perspective view from above of a joint according to the invention incorporated in a self assembly divan base;

Figure 2 is a perspective view from below of the joint of Figure 1;

Figure 3 is a perspective view of an assembled divan incorporating four joints according to the invention.

25 Referring to the drawings, there is shown a joint 10 for joining a pair of members such as a side panel 11 and an end panel 12 of a divan. Each panel 11, 12 is in the embodiment shown made up of a pair 11a, 11b; 12a, 12b of elongate members covered with and interconnected by, e.g., a furnishing fabric (not shown), to give the appearance of discrete  
30 laminar panels.

At the end of each panel 11, 12 to be joined there is secured thereto a protuberance 13. Each protuberance 13 includes a rear face 14 which projects from the inner surface of the relevant panel 11, 12. In the embodiment shown, each rear face 14 extends from the top to the

bottom of the relevant panel parallel to the end thereof. In the embodiment shown, the rear face is at an angle of  $135^\circ$  to the inner faces of each laminar panel 11, 12.

5 The members 11a, 11b and 12a, 12b are securely received respectively at the top and bottom of the associated protuberance 13 in a notch-like channel (i.e. a recess) 15 extending from the top to the bottom of each protuberance 13. The members 11a, 11b; 12a, 12b are retained in the channels by e.g. staples.

10 Each rear face 14 terminates in an edge defined by the relevant rear face 14 and a forward face (not visible in the drawings) perpendicular thereto. Each forward face extends forwardly to the forwardmost edge of the relevant panel 11, 12. Each forward face also extends from the top to the bottom of the relevant panel.

15 Thus, it will be appreciated that the two forward faces may be placed in abutment one with the other as shown e.g. in Figure 1, as a result of which the panels 11, 12 are disposed at  $90^\circ$  one to the other. The presence of the protuberances 13 giving rise to the rear faces 14 increases the area of abutment of the forward faces, and thereby provides for a stable abutment.

20 (It will be appreciated that the rear faces 14 need not extend from the laminar members at an angle of  $135^\circ$  thereto, nor need the forward faces be at  $90^\circ$  to the rear faces. Judicious choice of the angles of the faces of the protuberances 13 may provide for abutment of the panels at various angular orientations.)

25 A first link is provided in the form of a detent 16. The detent comprises a latch member 16 pivotably captive on a screw 17 secured to one of the rear faces 14. The free end of latch member 16 includes a mouth 16a which may selectively be caused to engage a further screw 18 secured to the other rear face 14, thereby linking the two rear faces 14 together. The screws 17 and 18 may be tightened after latching of the  
30 detent, to provide a rigid interconnection between the two protuberances 13 and thereby stabilise the joint against separation.

A fillet plate 19 is secured to the bottom edges of the respective panels 11, 12 by means of e.g. screws 20, thereby to provide further



stability for the joint 10. Thus, the fillet plate 19 constitutes a second link. It will be appreciated that the detent (ie. the first link) tends to prevent separation of the joint in the direction parallel to the rear faces 14, and that the fillet plate 19 tends to prevent vertical separation of the joint members. The fillet plate 19 also performs a function in preventing the separation of the joint members in the direction parallel to the rear faces 14.

Assembly of the joint is a simple matter of placing the forward faces in abutting relationship one with the other; causing the mouth 16a of the detent 16 to engage the screw 18; tightening the screws 17, 18 as necessary to stabilise the joint; and securing the plate 19 by means of the screws 20 to the underside of the joint.

The fact that, in the embodiment shown, the rear faces 14 form essentially a continuous surface facilitates the operation of the detent 16. However, it is not essential that the rear faces 14 form a continuous surface.

It will be appreciated that, whilst it is necessary to insert screws 20 into the underside of the joint, the outer, vertical surfaces of the panels 11, 12 have no visible fasteners. Thus, it is possible to provide a smooth, attractive surface to the exterior of the joints.

In the embodiments shown, the panels 11, 12 are provided with an upholstered finish. This kind of finish assists in disguising the joint line formed by the forwardmost edges of the panels on the assembly of the joint. It will be appreciated that numerous other surface finishes may be equally successfully employed to disguise the joint line.

Referring particularly to Figure 3, there is shown an example of an item of furniture manufactured incorporating four joints 10 according to the invention. The item of furniture shown is a divan. The divan comprises two parallel side panels 11 and two parallel end panels 12. The panels are upholstered to provide an attractive appearance, and the use of joints 10 in accordance with the invention allows the divan to be provided as a self assembly item.

In the embodiments shown each of the side panels 11 includes a support rail 21 extending along the length thereof parallel to and

adjacent its upper edge. A plurality of mattress support slats 22 is disposed at intervals along the support rails 21 extending transversely of the divan. The support slats 22 are optionally securable to the support rails 21 by means of e.g. screws 23 thereby to provide a rigid  
5 base for a mattress. Securing of the support slats 22 in this manner additionally stiffens the divan, although in the embodiment shown not all the slats are secured.

In the embodiments shown, the support slats 22 are connected one to another by means of two parallel strips 24 of flexible webbing. The  
10 strips 24 of webbing are secured to the undersides of the slats 22 such that, when the slats are secured in position, the strips of webbing extend longitudinally of the divan. Thus, the support slats 22 are secured together when the divan is stored or transported in a flat pack, and when the divan is assembled the support slats 22 automatically become  
15 correctly positioned on the support rails 21 by virtue of the spacings of the support slats 22 on the strips 24 of flexible webbing.

Each fillet plate 19 of each joint 10 of the divan may be provided with a castor 25 for supporting the divan once it is assembled, and allowing its ready movement on a floor thereafter.

20 It will be appreciated that the joint 10 of the invention permits the provision of a divan in kit form which, once assembled, has the appearance of a fully upholstered, traditionally constructed divan.

It will also be appreciated that joints in accordance with the invention may be employed in numerous types of furniture, such as  
25 dressing tables, wardrobes, chairs, desks, dining tables, partition panels, book cases, cabinets and indeed virtually any kind of furniture in which it is desirable for there to be no visible fastenings on the exterior thereof.

CLAIMS

1. A joint for joining a pair of members, comprising a first protuberance rigidly secured at one end of one member;

5 a further protuberance rigidly secured at one end of another member, each protuberance including a forward face angled relative to the respective member to which it is secured;

a first link;

a second link; and

10 means whereby the links may be secured interconnecting the parts of the joint,

the arrangement being such that the forwardly directed faces of the protuberances are engageable in mutual abutment to interconnect the members in a predetermined orientation, the respective links being securable on such engagement of the forwardly directed faces to prevent  
15 separation of the members in at least two mutually orthogonal directions.

2. A joint according to Claim 1 wherein each of the protuberances includes a rear face, the first link and the means whereby said link may be secured being arranged such that, on securing thereof, said link interconnects the rear faces.

20 3. A joint according to Claim 1 or Claim 2 wherein the members are received in respective recesses formed in the protuberances.

4. A joint according to any of Claims 1 to 3 including a plurality of members secured to each protuberance.

25 5. A joint according to any one of Claims 2 to 4 wherein the means whereby the first link may be secured includes a first member projecting from one of the rear faces and a further member projecting from the other of the rear faces, said link being adapted to be pivotably captive on the first member and selectively engageable with the further member on engagement of the forward faces.

30 6. A joint according to any preceding claim wherein the forward faces are angled relative to the respective members such that said members are joined at right angles one relative to another on engagement of the forward faces.

7. A joint according to Claim 6 wherein the members are respectively a side panel and an end panel of an item of furniture, eg. a divan.

5 8. A joint according to any preceding claim wherein the second link comprises a plate adapted to interconnect the respective edges of the laminar members.

9. A joint according to Claim 8 wherein, on assembly of the joint, the plate includes a lower surface and a castor secured to said lower surface.

10 10. An item of furniture including a joint according to any preceding claim.

11. A divan comprising two end panels and two side panels defining four corners of the divan, each of said corners including a joint according to any of Claims 1 to 9.

15 12. A divan according to Claim 11 wherein each of said side panels includes an elongate support rail, and the divan includes at least one mattress support member extending transversely of the divan, and supported on the or a plurality of said support members.

20 13. A divan according to Claim 12 wherein the or a mattress support member is securable in position on at least one of said mattress support rails.

14. A divan according to any of Claims 11 to 13 including at least one upholstered panel.

25 15. A kit of parts for assembling a divan comprising a pair of side panels;

a pair of end panels, said side and end panels including a plurality of joints each according to any of claims 1 to 9; and fixing means whereby the kit may be assembled.

30 16. A kit according to Claim 15 wherein each side panel includes extending along the length thereof a support rail, the kit further including a plurality of mattress support members each adapted to be supported such that the support members extend laterally of the divan.

17. A kit according to Claim 16 wherein at least two mattress support members are interconnected by a flexible member.

18. A joint generally as herein described, with reference to or as illustrated in the accompanying drawings.

19. An item of furniture generally as herein described, with reference to or as illustrated in the accompanying drawings.

5 20. A divan generally as herein described, with reference to or as illustrated in the accompanying drawings.

21. A kit of parts generally as herein described, with reference to or illustrated in the accompanying drawings.

**Patents Act 1977****Examiner's report to the Comptroller under  
Section 17 (The Search Report)**

-10-

Applicant number

GB 9307354.2

**Relevant Technical fields**

(i) UK Cl (Edition L ) F2M (ME)

(ii) Int Cl (Edition )

**Search Examiner**

P M WELLER

**Databases (see over)**

(i) UK Patent Office

(ii)

**Date of Search**

24 JUNE 1993

Documents considered relevant following a search in respect of claims

Category (see over)	Identity of document and relevant passages	Relevant to claim(s)
X	GB 1537575 A (DAMGAARD) Figure 2	1,6
X	GB 1018321 A (SOC GRAMES) Figures 1, 5, 6	1,6

Category	Identity of document and relevant passages -    -	Relevant to claim(s)

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